UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/082,960	05/22/1998	ANN M. WOLLRATH	06502.0111-0	3411

22852 7590 03/26/2004	EXAMINER
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP	LAO, SUE X

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1300 I STREET, NW	2126	30
WASHINGTON, DC 20005		

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- *The MAILING DATE of this communication appears on the cover sh et with the c rrespondence address* --

Peri d f r Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>09 December 2003</u>.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>34-41,44-61,64-68,70-75,77-82,84-89,91-96 and 98-105</u> is/are pending in the application.

   4a) Of the above claim(s) <u>44-52</u> is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>34-41, 53-61, 64-68, 70-75, 77-82, 84-89, 91-96, 98-105</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Pri rity under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a) ☐ All b) ☐ Some * c) ☐ None of:

   1. ☐ Certified copies of the priority documents have been received.

   2. ☐ Certified copies of the priority documents have been received in Application No. _____.

   3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
   application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date <u>28</u>.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____ .

DETAILED ACTION

1.   Claims 34-41, 44-61, 64-68, 70-75, 77-82, 84-89, 91-96, 98-105 are pending, of
which claims 44-52 are withdrawn from consideration. This action is in response to the
amendments filed 12/9/2003. Applicant has amended claim 53 and canceled claims
106-114.

2.   The text of those sections of Title 35, U.S. Code not included in this action can
be found in a prior Office action.

3.   Claims 34, 39-41, 53, 54, 59-61, 64, 66, 68, 70, 71, 73, 75, 77, 78, 80, 82, 84, 85,
87, 89, 91, 92, 94, 96, 98, 99, 101, 103-105 are rejected under 35 U.S.C. 103(a) as
being unpatentable over Gaines (U S Pat. 5,961,582) in view of Hamilton et al (U S Pat.
6,009,464).

        As to claims 34 and 54, Gaines teaches a method in a data processing system
(distributed execution environment 301, fig. 3A and fig. 1) having a first program (virtual
application on each server host computer 101 such as first server host) containing code
(transferable program 302 including elements of user interface 203) and having a
second program (virtual application on each server host computer 101 such as second
server host), the method comprising the steps of: providing a first abstract computing
machine (virtual operating system 141 executing on each/first server host 101) to the
data processing system; providing a second abstract computing machine (virtual
operating system 141 executing on each/second server host 101, another/separate ·
instance of virtual operating system 141) to the data processing system; running the first
program on the first abstract computing machine (execute virtual application / execute
transferable program 302 on first server host); running the second program on the
second abstract computing machine (execute virtual application / execute transferable
program 302 on second server host); sending (transfer) a portion of the code
(transferable program 302 including elements of user interface 203) from the first
program to the second program (from first to second server hosts); and running the

portion of the code by the second program on the second abstract computing machine (execute program 302 at second server host). See col. 6, lines 22-46; col. 12, line 50 - col. 14, line 65; in particular, col. 14, lines 15-27.

Gaines does not teach based on stub code obtained from the second abstract computing machine.

Hamilton teaches communication between two programs on respective virtual machines, wherein stub code is obtained from a remote location to provide the stub functions of the communication (download object stub 471 as part of the downloaded code 460 from code server 440 to client 410). See col. 5, line 37 - col. 6, line 58. Given the teaching of Hamilton, it would have been obvious to send the portion of code (communication) based on stub code obtained from the second abstract computing machine (downloaded stub code). One motivation to combine the teachings of Gaines and Hamilton would be that Gaines desires to run programs in a host-independent manner (col. 5, lines 5-18), for which Hamilton provides a mechanism to do so (col. 6, lines 49-58). Therefore, one of ordinary skill in the art would have been motivated to use the mechanism of Hamilton to provide the host-independence in Gaines.

It is noted that Hamilton teaches that the document server, code server and network server co-locate at the same address space and/or in the same physical machine. See col. 10, lines 54-60. Therefore, the combined teaching of Gaines and Hamilton provides that the stub code is obtained from the second abstract computing machine.

As to claims 39 and 59, Gaines teaches first/second computer system with a first/second processor (multiple host machines 101 in fig. 3A, each executing the virtual OS 141 on a processor, fig. 1), the second program has second code (transferable program 302 including user interface 203 transferred to and executing on each server host), receiving the first/second code by the first/second abstract computing machine (process control filter 151 for interprocess communication between first and second hosts); converting (translate) the first/second code into a format suitable to the first/second processor by the first/second abstract computing machine (translate virtual request to request for actual resources); executing the first/second code in the format

suitable to (use actual resource such as file system 105). See col. 6, lines 29-36, 42-46; col. 7, lines 15-30; fig. 1.

As to claims 40 and 60, Gaines teaches providing the first/second abstract computing machine to the first/second computer system (multiple host machines 101 in fig. 3A, each executing the virtual OS 141). See col. 12, line 50 - col. 14, line 65.

As to claims 41 and 61, Gaines teaches in a same manner (run programs in a host independent manner, relatively uniform environment in which program executes). See col. 4, lines 14-19; col. 5, lines 14-18.

As to claim 53, note the discussions of claims 34 and 41.

As to claims 64, 78, 92, it is covered by claim 34 except that the stub code being a stub class instance. Note discussion of claim 34 and the equivalence of executing/running. Gaines further teaches first/second computing environments (host machines 101, fig. 3A, or virtual OSes thereon), returning results (output, col. 10, lines 55-62). Regarding the stub code being a stub class instance, this is met by Hamilton in that the downloaded code and the stub code in Hamilton are implemented in Java language (col. 5, lines 50-65), wherein code and associated data are encapsulated in classes and instantiated into instances / objects.

As to claims 66, 73, 80, 87, 94, 101, Gaines teaches function (service), parameter (permission 147).

As to claims 68, 75, 82, 89, 96, 103, the system of Gaines is a runtime system.

As to claim 104, Gaines as modified teaches (Hamilton) the stub class instance (object stubs) is included in a second computing environment (stored in code server, col. 5, lines 50-65).

As to claims 70, 77, 84, 91, 98, 105, Gaines teaches returning results (error message, col. 8, lines 1-3).

As to claims 71, 85, 99, note discussion of claim 64 and Gaines further teaches receiving (fig. 3A).

4.   Claims 35-38, 55-58, 65, 67, 72, 74, 79, 81, 86, 88, 93, 95, 100, 102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaines in view of Hamilton et al as applied to claims 34 and 54 and further in view of Priven et al (U S Pat. 5, 327,559).

As to claims 35 and 55, Priven teaches sending an object (CIP object 702) containing a portion of code (action 706) of one program to another program for remote execution in a distributed execution environment. See fig. 7A and denoting text. Given the teaching of Priven, it would have been obvious to send an object containing the portion of the code to the second program. In so doing, the platform-independence of messaging in Gaines would have been enhanced by the self-describing nature of the message format of Priven (col.12, lines 34-47).

As to claims 36 and 56, Gaines as modified teaches (Priven) sending data (parameters 708) for remote execution. See fig. 7A and denoting text. Note discussion of claim 35 for a motivation to combine.

As to claims 37, 38, 57 and 58, Gaines teaches the second/first program has a function (program 302 in each server host computer 101), invoking the function by the first/second program (for execution on a server host computer 101). See col. 14, lines 15-27; fig. 3A, 3B. Priven teaches that, between two distributed programs, code (action 114) is part of an object (CIP object 702), passing the object as a parameter to a function (remote processing by application 1116) and returning the object as a result of (send response to sending system). See fig. 7A; col. 8, lines 12-24; col. 10, lines 6-25. Note discussion of claim 35 for a motivation to combine.

As to claims 65, 72, 79, 86, 93, 100, note discussion of claim 35.

As to claims 67, 74, 81, 88, 95, 102, note discussion of claims 38 and 66.

5.   Applicant's arguments filed 12/9/2003 have been fully considered but they are not persuasive.

Applicant argued in substance that the stub in Hamilton is obtained from a separate server, ie, the document server and not the network server. (remarks, page 35, 2nd and 3rd paragraphs).

The examiner's response is as follows. First, whether the server is a document server, or a code server or a network server is not required nor precluded by the claim language. In fact, the claim language only requires a first program containing code and second program, which does not even require the programs being client or server or of other nature. See claims 34-41, 53-61, 64-68, 70-75, 77-82, 84-89, 91-96, 98-105. Second, Hamilton teaches that the document server, the code server and the network server co-locate at the same address space and in the same physical machine. See col. 10, lines 54-60. Therefore, the stub code is obtained from the same server which also runs the portion of code sent to it. Therefore, the combined teaching of Gaines and Hamilton meets that the stub code is obtained from the second abstract computing machine, as claimed.

As to applicant's argument regarding motivation to combine the teachings of Gaines and Hamilton, such a motivation is provided. See discussion of claim 34. As to the argument that Gaines, col. 3, lines 52-56 teaches away from using a virtual machine, the examiner respectfully disagrees. This passage of Gaines is recited as follows: *"Another method of the prior art has been to provide a "virtual machine" for execution of the program. The virtual machine provides a layer of software, typically part of the operating system software, that simulates a computer that has been reserved for execution of the specific program. Sometimes the virtual machine is augmented by calls to services provided by the operating system, such as memory management. However, the virtual machines provided in the prior art generally were directly mapped onto the hardware of the real machine on which the program was executing. Thus, the program to be executed on the virtual machine was still required to be tailored for that particular hardware and the services provided by the particular operating system software."*. Here Hamilton describes the use of a conventional virtual machine to simulate an operating environment for executing a program, which leads to the introduction of his improved version of the conventional virtual machine, *"Accordingly, it would be advantageous to provide a virtual execution environment for which programs could be written that are capable of execution on different computer*

hardware and with different operating systems". (col. 3, line 66 – col. 4, line 2). Clearly Gaines does not teach away from using a virtual machine in these passages.

For these reasons, applicant's arguments are not persuasive.

6.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

7.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for response to this final action is set to expire THREE MONTHS from the date of this action. In the event a first response is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than SIX MONTHS from the date of this final action.

8.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sue Lao whose telephone number is (703) 305-9657. A voice mail service is also available at this number. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7238 for After Final communications, (703) 746-7239 for Official communications and (703) 746-7240 for Non-Official/Draft communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-9600.

Sue Lao   *Sue Lao*
March 19, 2004